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U.S. Serial No. 08/468,649

REMARKS

In the Official Action dated August 13, 1996, the Examiner maintained an objection to the specification for an alleged failure to provide an enabling disclosure. The Examiner objected to the use of terminology describing "deflecting plates" in a "crossed nicol state," despite Applicant's discussion of the terminology in previous responses wherein it was indicated that the concept of "crossed nicol state" is known in the art. Applicants further provide evidence herewith to establish that cross nicol state is generally understood by those skilled in the art to mean a particular orientation of deflecting plates or polarizers.

Attached hereto as Appendix-I is a translation of a definition of "cross nicol state" on page 1309 of the Dictionary of Physics, published by Baifukan on November 30, 1989, Japan. Thus, the objective evidence provided herewith further establishes that the terminology is well understood by anyone skilled in that art to mean a state at which deflecting elements are disposed such that polarizing axes are crossed at right angles to each other.

The Examiner further maintained the objection that the specification fails to disclose "how the embodiments requiring the photo-blocking would work when the width was zero." As previously asserted in the

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Amendment filed June 24, 1996) the practical reality is that the photo-blocking layer can not have a thickness of zero and still serve as a photo-blocking layer. Although one skilled in the art will appreciate such practical reality, Applicants amend the specification herewith to indicate that the photo-blocking layer is "approximately  $0.5\mu\text{m}$ " as disclosed. Accordingly such objections and rejections under 35 U.S.C. §112 first paragraph should be withdrawn.

Similarly, the objection to the terminology "non-electrically interconnected" is overcome by eliminating such language from the claims.

Claims 10-13, 18 and 23 were rejected under 35 U.S.C. §112, second paragraph as indefinite due to the phrase "an active element in matrix." The claims are amended herewith to more clearly define the invention and to indicate that each of the claimed liquid crystal panels is made of "at least one active element in a matrix." Thus the rejection under 35 U.S.C. §112, second paragraph is overcome.

The Examiner rejected claims 4, 32, 35 and 43 as anticipated by JP 6-99130 to Kibe.

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Attached hereto as Appendix-II, for the Examiner's convenience, is an English translation of relevant distinguishable portions, paragraphs [0010] and [0011], of the reference to Kibe (JP-A-6-95130).

In the cited Kibe reference, each of the liquid crystal display devices (10a-10e) is composed of two substrates 11 and 12 which are laminated to each other through a sealing material 13 while sandwiching a liquid crystal 14 in a space therebetween. A light shielding plate 16 is provided in every two adjacent liquid crystal display devices.

According to the above arrangement, light emitted from a backlight 15a is blocked by the light shielding plate 16. At the same time, light emitted from a backlight 15b is not scattered by the sealing material 13, and hence, does not shine in a space between the liquid crystal display devices 10a and 10b, because the sealing material 13 has almost the same refractive index as the refractive index of the substrates 11 and 12. Thus to avoid back-light scattering, a specific material with a specific refractive index is required.

On the other hand, the present invention does require a specific sealing material having a particular refractive index. In other words, any kind of sealing material can be used in the present invention in contrast to the Kibe reference.

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According to the cited Kibe reference, a space is left when a plurality of liquid crystal display panels are assembled; however, light leaking through these spaces can be blocked by the light shielding plates 16. As shown in Reference Figure A in Appendix III attached hereto, each light shielding plate 16 is placed in parallel to the display surface of the panel to block incident light perpendicular to the display surface alone. Thus, the light shielding plate 16 can not block incident light diagonal with respect to the display surface, or it even disturbs a display in some cases. Each light shielding plate 16 in Kibe is of the same structure as the one illustrated in originally filed Figure 16 of the present invention, and the differences from the counterpart in the present invention are set forth in the originally filed specification.

On the other hand, according to the present invention (for example, Claim 1), a plurality of liquid crystal display elements are assembled on a plane, and a deflecting plate of crossed nicol state is provided to cover the entire surface of the assembled liquid crystal display elements. Thus, should there be a space between the display surfaces of the adjacent liquid crystal display elements, light leaking through such a space can be blocked completely. Also, the present invention additionally uses a photo-block film (third photo-blocking film 61) as photo-blocking means, which is placed perpendicular to the display

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surface (See Reference Figure B in Appendix III hereto). Since the photo-blocking film of the present invention can block diagonal incident light, it does not disturb a display.

Consequently, in contrast to the prior art, it has become possible to block incident light completely (make the joints least noticeable) using the deflecting plate of the crossed nicol state, the photo-blocking film (third photo-blocking film 61), and the first photo-blocking film (black matrix 5) according to the invention.

In general, if the deflecting plate of crossed nicol state is provided, light is transmitted completely only when a material (TN liquid crystal or the like) having optical rotating power of  $90^\circ$  is intervened. Thus, if such an intervening material is not used (namely, in the spaces), the light is blocked completely since it is not rotated at all. The present invention efficiently blocks light leaking through the spaces by taking advantage of the above optical characteristics.

As has been explained, in the cited Kibe reference the light shielding film is provided in parallel to the display surface. Thus, only the incident light perpendicular to the display surface can be blocked (in other words, the deflecting plate of the crossed nicol state is not provided to cover the entire surface therein). Contrarily, in the present invention, not only the deflecting plate of

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the crossed nicol state is provided to cover the entire surface to block the incident light perpendicular to the display surface, but also the photo-blocking film is provided perpendicular to the display surface to block incident light diagonal with respect to the display surface as well. Thus, the cited reference and present invention are different in position of the photo-blocking film, and purpose and effect of the same.

Furthermore, in the cited Kibe reference, the pixels are provided at regular intervals (a) as illustrated in Figures 4 and 5 thereof. The interval (a) is determined by mapping the pixel interval defined by the photo-blocking plate 16 to the pixel interval defined by the black matrix that limits a pixel area of each liquid crystal display device.

In contrast, in the present invention, the photo-blocking film having regular pixel intervals is provided to cover the liquid crystal display elements entirely. Thus, each screen can have regular pixel intervals easily using the photo-blocking film having regular pixel pitches. Therefore, Kibe does not disclose or suggest applicants' claimed invention.

The Examiner rejected various claims as being obvious over Kibe. As discussed hereinbefore Kibe does not disclose or suggest Applicants claimed cross nicol state deflecting plates, nor does Kibe disclose or

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suggest Applicants claimed photo-blocking films. Therefore, the prima facie obviousness of applicants claimed invention in view of Kibe has not been established and the rejection thereover should be withdrawn.

Claim 38 was rejected as being obvious over Kibe in view of U.S. Patent No. 4,733,948 to Kitihara and U.S. Patent No. 4,951,240 to Masaki. Applicants respectfully traverse such rejection.

The cited Kitahara reference discloses a color liquid crystal display panel provided with a light intercepting film 13, which is made of a metal film, such as aluminum (column 3, lines 9-11), or a dyed resin or colored vapor deposited film, the last two films having light absorption characteristic (column 3, lines 31-44).

According to the cited Masaki reference, a light-intercepting film 13 formed from a water-soluble resin and colored by the dyeing treatment is provided to shield an area other than a pattern electrode area of the electrode-supporting plate from the incident light (column 2, lines 37-44). The reference also indicates that the light-intercepting film 13 may be of a metallic film (column 1, lines 46-50).

However, the cited references fail to disclose or suggest an arrangement of layering the metallic film and light absorbing film, which is unique to the present invention (corresponding to Claim 38).

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Further all of the cited references are silent about the above-explained optical characteristics. Thus, the present invention (Claim 38) can not be attained by combining the above cited references.

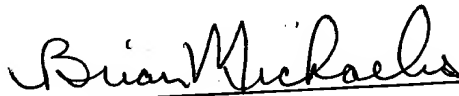
By the amendments and remarks herein, Applicants believe that the present application is in condition for allowance. Therefore, reconsideration and allowance is respectfully requested.

The Examiner is invited and encouraged to telephone the undersigned with any concerns in furtherance of the prosecution of the present application.

Respectfully submitted,

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